DATA PROCESSING SYSTEM FOR PRICING,

COSTING AND BILLING OF FINANCIAL TRANSACTIONS

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BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates generally to data processing systems and, in particular, to banking services pricing.

Discussion of Related Art

Today, most financial products are commodities and their markets are competitive. New competition can also come from new products, new services, lower prices, the introduction of Real Time Gross Settlement (RTGS), the use of the Internet, mergers, acquisitions, and the shift towards greater reliance on bank fees and charges in place of higher interest margins and in place of cross subsidies between products. Pricing is often a major force in the decision making process for the customers in deciding which financial products or services to use. Therefore, a financial services company (FSC) needs a strategy and an infrastructure to manage its pricing strategies and to manage pricing changes in the most effective way. In many markets, the capability to manage pricing strategies better than the competition can be the competitive advantage.

-1-

Furthermore, fee arrangements change in value and structure in response to competitive situations. Fee arrangements can take many shapes, e.g., by product; by time of submission; by specified execution time; by window

5 of time between submission and execution; by transaction value; by pre-assigned payment slots; and/or by some combination of these. In addition, customers are mobile and shop for the best deals. The methods of payment, timings of payment, cash management practices and credit

10 requirements change. Also, competitors pricing strategies change. In response to these changes, FSCs need the ability to calculate pricing accordingly.

Therefore, FSCs not only need to be able to accurately measure the internal economics of the delivery

15 of each product, the margin, the value of the customer relationship overall, and how those measures are changing. The FSCs also need the flexibility to perform relationship pricing by product or across products, taking special arrangements into consideration. In the same time, the

20 FSCs need an infrastructure to keep up with the ever-changing market demands.

SUMMARY

Accordingly, the present invention includes methods

25 and systems for pricing financial transactions by first defining product rules for each financial transaction, locating appropriate product rule for a particular financial transaction, linking the product rule to corresponding price table, calculating a price using the

30 pricing method contained in the price table, and billing the appropriate party using the billing method contained in the price table. A FSC, using embodiments of the present invention, can price a particular financial

transaction based on various criteria, including any
special deals made and bill it to the appropriate party.

Specifically, a data processing system in accordance
with one embodiment of the present invention, creates a
5 product rule corresponding to a financial transaction.
The product rule contains various attributes and is linked
to a price table which contains further attributes,
including pricing method and billing method. A price is
calculated in accordance with the pricing method and
10 billing is done in accordance with the billing method.

DETAILED DESCRIPTION

The following includes a detailed description of the
best mode or modes presently contemplated by the inventor
15 for carrying out the invention. It is to be understood
that these modes are merely exemplary of the invention.
The detailed description is not intended to be taken in a
limiting sense.

The present invention provides a data processing
20 system which utilizes Product Rules in conjunction with
Price Tables to provide a comprehensive set of pricing
combinations and to enable sophisticated exception
pricing. In the data processing system of the present
invention, there are three parts to the pricing function:
25 locating an applicable product rule for a particular
financial transaction, looking up the applicable price
table, then calculating the appropriate pricing using the
pricing method contained in the price table.

A suitable database system for implementing a data
30 processing system in accordance with the present invention
is described in a co-pending U.S. application Serial No.
08/904,716 entitled "DATA PROCESSING SYSTEM FOR COMPLEX
PRICING AND TRANSACTIONAL ANALYSIS," which is hereby
incorporated by reference in its entirety. However, other
35 database systems can be used to implement a data
processing system using the methods of the present
invention described herein.

First, Product Rules are defined. Product Rules are usually created for each product. (A financial transaction is denoted as a "product.") Product Rules are also created for all situations needing some form of

5   special or custom pricing. Therefore, it is possible to have different Product Rules created for the same product but for different situations. For example, Product Rules can be created for all products, for all Billable Service Codes (BSC1/2/3/4) of each product, for all Billable

10   Service Codes of each product for each market segment, for all Billable Service Codes of each product for each Balance Allocation Code (BAC), for all Billable Service Codes of each product for each Customer Account Analysis (CAA) group of accounts, for all Billable Service Codes of

15   each product for each account, and for each Billable Service Code. The Product Rules are created and changed from the Product Rule detail screen (PrdtRule Detail screen).

Each Product Rule contains various attributes

20   representing different types of information. Here, each Product Rule contains a number of attributes representing four types of information. The four types of information are: name of the Product Rule, active status of the Product Rule, how pricing and billing is to be performed

25   and display only information about the target entities. The attributes are: Entity Name/Num, Product Code, Apply to Indic, PrdtRule Scope, Record Status, Billing Category, Billing Plan, PRICE Table Name, Special Group, Alternate Account, Alternate Account Type, Feed Indic, Collection

30   Indic, Advising Code, Minimum Revenue Indic, Derived Volume On, Subscription Volume, Billing Cycle and Run.

The name of the Product Rule forms a unique identifier for each Product Rule. The name is constructed of four main attributes which explain when a Product Rule

35   is used. The four mandatory attributes are Entity Name/Num, Product Code, Apply to Indic, and PrdtRule Scope. Entity Name/Num provides information such as a customer number for a customer, an account number for an

-4-

account, or a service code for a particular service.
Product Code provides information as to what type of
financial transaction is being done. Apply to Indic
provides information as to what the Product Rule actually
5 applies to, e.g. account or service. PrdtRule Scope
provides refined details on the scope of the Product Rule.
Of course, other attributes or combination may be used to
form the name.

   Examples will be used to illustrate how the naming
10 convention using the four attributes named above applies.

	Entity Name/Num	Product Code	Apply to Indic	PrdtRule Scope
1	PBB	PBB	PRDT	DFLT
2	35	35	PRDT	DFLT
3	_____-__CNTL	35	ACMK	DFLT
4	12345678900-01DDA	35	ACNT	DFLT
5	12345678900-01DDA	35	ACNT	1234567
6	1234567	35	SVC	DFLT

   The first Product Rule "PBB-PBB-PRDT-DFLT" is the
highest level of default and is activated when pricing is
15 performed on BSC1/2/3/4 Billable Service Codes for a
product which does not have a Product Rule. For example,
if there are only 2 Product Rules (PBB-PBB-PRDT-DFLT and
35-35-PRDT-DFLT), then the first Product Rule "PBB-PBB-
PRDT-DFLT" would be used for pricing, costing and billing
20 of, for example, product 27.
   The second Product Rule "35-35-PRDT-DFLT" is
activated when pricing is performed on BSC1/2/3/4 Billable
Service Codes for product 35.
   The third Product Rule "_____-__CNTL-35-ACMK_DFLT"
25 is activated when pricing is performed on BSC1/2/3/4
Billable Service Codes for product 35 but only for
accounts with account numbers which match the account wild
card mask "_____-__CNTL".
   The fourth Product Rule "12345678900-01DDA-35-ACNT-
30 DFLT" is activated when pricing is performed on BSC1/2/3/4

Billable Service Codes for product 35 but only for account number 12345678900-01DDA.

The fifth Product Rule "12345678900-01DDA-35-ACNT-1234567" is activated when pricing is performed

5   specifically on BSC1/2/3/4 Billable Service Code 1234567 for product 35 but only for account number 12345678900-01DDA. For services other than 1234567, the fourth Product Rule is activated.

The sixth Product Rule is activated when pricing is

10 performed specifically on BSC1/2/3/4 Billable Service Code 1234567 for product 35 for all accounts.

A Search Key is constructed from Entity Name/Num, Product Code, Apply to Indic, and PrdtRule Scope, and may be displayed on the screen. The Search Key is the

15 connection to locating the applicable Price Table. The Search Key is also used as an aid to check the Name which the data processing system has constructed for the Product Rule. Because the Search Key is generally used for technical purposes only, it may be ignored by users when

20 used for this purpose.

Active status of the Product Rule contains information about the record status of the Product Rule. The record status can be either active or dormant. A dormant state means that a Product Rule has been set up

25 for future activation. For example, a special deal has been negotiated but will not take effect until some later date. Product Rules relating to that special deal can be created immediately but placed in a dormant mode. The data processing system will then ignored these Product

30 Rules until they are activated on the date when the deal goes into effect. This attribute provides the flexibility of activating or deactivation a Product Rule and allows the Product Rule to remain in the data processing system while not in use.

35   Information about how pricing and billing is to be performed contains attributes that gives significant information on how the price is used. The information about how pricing and billing is to be performed includes

information used by the data processing system to find the applicable Price Table containing prices or costs. For example, information about how pricing and billing is to be performed can include attributes such as Billing

5 Category, Billing plan, Price Tbl Name, Special Group, Alternate Account, Alternate Account Type, Feed Indicator, Collection Indicator, Advising Code, Minimum Revenue Indicator, Derived Volume On, Subscription Volume, Billing Cycle, and Run Driver.

10 Display only information about the target entities is a one-liner display on the screen that displays the applicable target entities which are referred to by the Product Rule. This information may include attributes such as Ac/BAC/Sv/Mk/Prd, Price Table detail, and

15 alternate account.

The Product Rule attributes will be described in further details in the following paragraphs.

Entity Name/Num is a mandatory attribute and can be any of the following: an account wild card mask containing

20 any mixture of alphabetic characters, numbers, a hyphen "-", wild card characters of underscore "_" (equals any single character) and a single percentage "%" (equals any zero or more characters) which can only be used as the last non blank character, an existing account number, an

25 existing BAC, an existing CAA main account number, an existing market segment, an existing product code, or an existing BSC1/2/3/4 Billable Service Code.

When Apply to Indic is not "ACMK", the Entity Name/Num value is an identifier of an entity which exists

30 on the database. When Apply to Indic is "ACMK", the account wild card mask can include any mixture of alphabetic characters, numbers, a hyphen "-", and wild card characters of underscore "_" and a single percentage "%" which can only be used as the last non blank

35 character.

Product Code is another mandatory attribute. Product Codes answer the question as to which service or product is being used. Product Codes are required in the database

and may be supplied "out of the box". For example, a
Product Code of "35" is a code from Treasury Management
Association (TMA)Product Families and indicates the
service requested is a wire transfer transaction.

5   A Product Rule should be set-up for each Product the
data processing system will price and cost and these
Product Rules will be shown by Apply to Indic as "PRDT".
A Product Rule using "PBB" as a product code provides the
data processing system with a default Product Rule named

10   "PBB-PBB-PRDT-DFLT."

       Apply to Indic is a third mandatory attribute. The
value of Apply to Indic indicates the type of entity which
Entity Name/Num refers to. For example, an indicator may
indicate that a particular Product Rule applies only to a

15   particular account, service or customer wire transfer.

       Validation rules are applied at the time of creation
to check the validity of the indicator with respect to
Entity Name/Num. The following table illustrates the
validation rules for each Apply to Indic value.

20

Apply to Indic	Validation performed for Entity Name/Num
ACMK	An account wild card mask can use the following characters: any alphabetic characters, any numbers, a hyphen "-", any number of underscore characters "_" which represents any single character, "%" represents any zero or more characters. ("%" can appear only once in the account wild card mask and must be the last non-blank character in the account wild card mask.)
ACNT	Entity Name/Num must be an existing account number.
BAC	Entity Name/Num must be an existing BAC.
CAA	Entity Name/Num must be an existing CAA main account number.
MKT	Entity Name/Num must be an existing market segment.

PRDT   Entity Name/Num must be an existing product.

SVC   Entity Name/Num must be an existing BSC1/2/3/4 Billable Service Code.

A Product Rule can exist for a CAA main account which covers all accounts in the CAA account grouping. An additional Product Rule can also exist just for the CAA

5   main account so that this account can have exception pricing. There are some special situations when Apply To Indic is "MKT", meaning market segment, and the Entity Name/Num is a CAA.

For CAA individual accounts, the data processing

10   system first attempts to find the account's market segment. If the market segment for the individual account is missing, the data processing system then attempts to find the market segment of the account's BAC.

For CAA main accounts, the data processing system

15   first attempts to find the account's market segment, and if the account's market segment is missing, the data processing system then attempts to find the market segment of the account's BAC.

For CAA subordinate accounts, the data processing

20   system first attempts to find the account's market segment. If the account's market segment is missing, the data processing system then attempts to find the market segment of the account's BAC. If the market segment of the account's BAC is also missing, the data processing

25   system then attempts to find the market segment of the CAA main account. If the market segment of the CAA main account is still missing, the data processing system then attempts to find the market segment of the CAA main account's BAC.

30   PrdtRule Scope is another mandatory attribute. PrdtRule Scope contains refined details on the scope of a particular Product Rule by defining how a Product Rule is applicable to a product's BSC1/2/3/4 Billable Service Codes. The possible entries are "DFLT", "*" or a

-9-

BSC1/2/3/4 Billable Service Code. "DFLT" means the Product Rule is applicable to all of the product's BSC1/2/3/4 Billable Service Codes. Entity Name/Num values which are account wild card masks require PrdtRule Scope

5   to be "DFLT". "*" means the Product Rule is applicable only to BSC1/2/3/4 Billable Service Codes which have a unit price in the Price Table, i.e., Price Method (Mth 1) of "U". Any other value is deemed to be a BSC1/2/3/4 Billable Service Code, meaning that the Product Rule is

10   applicable to that particular BSC1/2/3/4 Billable Service Code only. When Subscription Volume is not blank, the BSC1/2/3/4 Billable Service Code specified in PrdtRule Scope must use a Service Role of "SUBS" on the Service Details screen.

15   Record Status is an optional field. Record Status displays the status of the record. Record Status value can be blank, "++" meaning a relationship is missing, "00" meaning the record is closed, "01" meaning the record is open, or "11" meaning the record is dormant.

20   Billing Category is an optional field. Billing Category contains information of which set of Billable Service Codes (BSC1 or BSC2 or BSC3 or BSC4) to use to bill a particular customer. When a pricing is to be performed, the data processing system uses the Product

25   Rules to find the applicable Billing Category. The value for Billing Category can be blank, BSC1, BSC2, BSC3 or BSC4. BSC1, BSC2, BSC3 and BSC4 are billing categories provided "out-of-the-box". The data processing system performs Product Rule lookups until a non-blank Billing

30   Category is found. Billing Category is always based on a CAA individual account or on a CAA main account. In the case of a CAA subordinate account, the Billing Category is based on its CAA main account.

Following table shows a hierarchy of how the data

35   processing system performs Billing Category lookups.

Step	Entity Name/Num	Product Code	Apply To Indic	PrdtRule Scope	Billing Category
1	_____ -__CNTL	The product code	ACMK	DFLT	BSC2
2	The CAA individual or CAA main account	The product code	CAA	DFLT	?
3	The CAA individual or CAA main account	The product code	ACNT	DFLT	?
4	The BAC code	The product code	BAC	DFLT	?
5	The product code	The product code	PRDT	DFLT	BSC1
6	PBB	PBB	PRDT	DFLT	BSC1

"?" means the Product Rule's Billing Category. If the Product Rule's Billing Category is blank, there is no Billing Category applicable for this Product Rule and the data processing system continues to look by executing the next step until one is found.

Assume the data processing system needs to finds the Billing Category for CAA subordinate account "11111111111-01DDA". Further assume that the product code is "35"; account is the CAA main account "222222222222-01DDA"; and the CAA main account belongs to BAC "0712301". The sequence of Product Rule lookups is performed as illustrated in the following example.

-11-

Step	Entity Name/Num	Product Code	Apply To Indic	PrdtRule Scope	Billing Category
1	_____ -__CNTL	35	ACMK	DFLT	BSC2
2	222222222222 -01DDA	35	CAA	DFLT	?
3	222222222222 -01DDA	35	ACNT	DFLT	?
4	0712301	35	BAC	DFLT	?
5	35	35	PRDT	DFLT	BSC1
6	PBB	PBB	PRDT	DFLT	BSC1

In the above example, step 6 never executes because
the Product Rule lookups stop at step 5, after finding
5   "BSC1".

Billing Plan is an optional field. Billing Plan
contains information of whether the customer is billed
using compensating balance method or using fee-based
method or using services rendered. Service rendered is
10   for cost only which is used to handle inter office
allocations. When billing is to be performed, the data
processing system uses the Product Rules to find the
applicable Billing Plan. The data processing system
performs Product Rule lookups until a non-blank Billing
15   Plan is found. The lookups do not use CAA roles.
Therefore, the data processing system is not interested in
whether an account is a CAA individual account or a CAA
main account or a CAA subordinate account.

The following table illustrates the hierarchy for
20   Product Rules lookups for Billing Plan.

Step	Entity Name/Num	Product Code	Apply To Indic	PrdtRule Scope	Billing Plan
1	_____ -__CNTL	The product code	ACMK	DFLT	SERV
2	The	The	SVC	The	?

-12-

	BSC1/2/3/4 Billable Service Code	product code		BSC1/2/3/4 Billable Service Code	
3	The account number	The product code	ACNT	The BSC1/2/3/4 Billable Service Code	?
4	The account number	The product code	ACNT	DFLT	?
5	The BAC code	The product code	BAC	DFLT	?
6	The product code	The product code	PRDT	DFLT	COMP
7	PBB	PBB	PRDT	DFLT	FEE

"?" means the Product Rule's Billing Plan. Billing Plan may contain the following value: blank, "COMP", "FEE", or "SERV". If Billing Plan is blank, there is no Billing Plan applicable for this Product Rule and the data processing system continues to look by executing the next step. If Billing Plan is "COMP", compensating balance is used. If Billing Plan is "FEE", pricing is fee based. If Billing Plan is "SERV", a service has been rendered and will be billed as cost only. Note that only costing is performed when the Product Rule's Billing Plan is "SERV". When the Product Detail attribute multiple billing plans (Multiple BP's has a value of "N", the product does not use multiple Billing Plans and the Product Rule lookup starts at step 6.

Assume the data processing system needs to find the Billing Plan for account "11111111111-01DDA". Further assume the BSC1/2/3/4 Billable Service Code is "12345678" for product "10" and the account belongs to BAC "0712301".

The sequence of Product Rule lookups is performed according to the following example.

Step	Entity Name/Num	Product Code	Apply To Indic	PrdtRule Scope	Billing Plan
1	_____ -__CNTL	10	ACMK	DFLT	SERV
2	12345678	10	SVC	12345678	?
3	11111111111-01DDA	10	ACNT	12345678	?
4	11111111111-01DDA	10	ACNT	DFLT	?
5	0712301	10	BAC	DFLT	?
6	10	10	PRDT	DFLT	COMP
7	PBB	PBB	PRDT	DFLT	FEE

5   In the above example, step 7 never executes for product 10 because the Product Rule lookups stop at step 6, after finding "COMP".

PRICE Tbl Name is an optional field. A Product Rule refers to a Price Table using its PRICE Tbl Name field.
10 PRICE Tbl Name may contain a value of blank, any four-character combination, or "AUTO".

When PRICE Tbl Name is a four-character field, e.g. not blank and not "AUTO", the value must be the name of an existing Price Table. For example, if PRICE Tbl Name is
15 "PB01", this Product Rule uses the Price Table named "PB01" for its prices. If PRICE Tbl Name is "PB24", this Product Rule uses the Price Table named "PB24" for its prices.

When there are few exception pricing situations,
20 four-character Price Table names are adequate and simple to manage. However, when there are hundreds or even thousands of exception pricing situations, a more obvious and apparent method of naming is needed for users to be able to see where a current Price Table fits, which
25 Product Rule it belongs to and the boundaries of its jurisdiction. In these cases, the Price Table name can be

set to match the Product Rule name by using the value "AUTO" in the Product Rule's PRICE Tbl Name field. For example, if PRICE Tbl Name is "AUTO", this Product Rule uses the Price Table which matches its identifier made up

5   of the four attributes: Entity Name/Num + Product Code + Apply to Indic + PrdtRule Scope. "AUTO", therefore, is a special name. "AUTO" can only be used when Apply to Indic is "ACNT" or "CAA", and when Pricing Schema of the Price Table is "PRIC".

10   If PRICE Tbl Name is blank in a Product Rule, it means that this Product Rule does not get used for prices but can get used for its remaining features. Many Product Rules and many price Tables can be involved in a single pricing. However, a Price Table is only used if a Product

15   Rule refers to it. Therefore, Price Tables which are not referred to by Product Rules are never used in pricing, i.e., they are dormant.

    When a pricing is to be performed, the data processing system needs to be able to find the applicable

20   Product Rules and Price Tables so that a price and cost can be calculated for a BSC1/2/3/4 Billable Service Code. The data processing system performs Product Rule lookups until a non-blank PRICE Tbl Name is found.

    The following example shows how a Product Rule's

25   PRICE Tbl Name is used to match with the Price Table's Entity Name/Num. If the values of the PRICE Tbl Name and Entity Name/Num are the same, the PRICE Tbl Name and Entity Name/Num match.

30   Product Rule:

Entity Name/Num	Product Code	Apply to Indic	PrdtRule Scope	PRICE Tbl Name
1234567	35	SVC	DFLT	PB01
_____ - __CNTL	35	ACMK	DFLT	PB24

Price Table:

Entity Name/Num	Product Code	Apply to Indic	PrdtRule Scope
PB01	35	blank	blank
PB24	35	blank	blank

The following example shows how a Product Rule's PRICE Tbl Name of "AUTO" is used to match with Product Rule's identifier with a Price Table's identifier.

Product Rule:

Entity Name/Num	Product Code	Apply to Indic	PrdtRule Scope	PRICE Tbl Name
12345678900-01DDA	35	ACNT	DFLT	AUTO
12345678900-01DDA	35	ACNT	1234567	AUTO

Price Table:

Entity Name/Num	Product Code	Apply to Indic	PrdtRule Scope
12345678900-01DDA	35	ACNT	DFLT
12345678900-01DDA	35	ACNT	1234567

The sequence and hierarchy of Product Rule lookups for PRICE Tbl Name is as follows:

Step	Entity Name/Num	Product Code	Apply To Indic	PrdtRule Scope	PRICE Tbl Name
1	_____ -__CNTL	The product code	ACMK	DFLT	C001
2	The applicable BSC1/2/3/4 Billable Service Code	The product code	SVC	The BSC1/2/3/4 Billable Service Code	?
3	The CAA individual or CAA	The product code	ACNT	The BSC1/2/3/4 Billable	?

-16-

	subordinate account			Service Code	
4	The CAA individual or CAA subordinate account	The product code	ACNT	*	?
5	The CAA individual or CAA main account	The product code	CAA	The BSC1/2/3/4 Billable Service Code	?
6	The CAA individual or CAA main account	The product code	CAA	*	?
7	The CAA individual or CAA subordinate account	The product code	ACNT	DFLT	?
8	The CAA individual or CAA main account	The product code	CAA	DFLT	?
9	The BAC of the CAA individual or CAA main account	The product code	BAC	DFLT	?
10	The market segment of the account	The product code	MKT	DFLT	?
11	The product code of the BSC1/2/3/4 Billable Service Code	The product code	PRDT	DFLT	S001

-17-

| 12 | PBB | | PBB | PRDT | DFLT | S001 |

"The CAA individual or CAA subordinate account" means the account's CAA Role is either "INDIV" or "SUB". "The CAA individual or CAA main account" means the account's

5   CAA Role is either "INDIV" or "MAIN". In the case of a CAA subordinate account, its CAA main account number is used.

"The market segment of the account" means that for CAA individual accounts, the data processing system first

10   attempts to find the account's market segment. ·If CAA individual account's market segment is missing, the data processing system then attempts to find the market segment of the account's BAC.

For CAA main accounts, the data processing system

15   first attempts to find the account's market segment. If the account's market segment is missing, the data processing system then attempts to find the market segment of the account's BAC.

For CAA subordinate accounts, the data processing

20   system first attempts to find the account's market segment. If the account's market segment is missing, the data processing system then attempts to find the market segment of the account's BAC. If the market segment of the account's BAC is also missing, the data processing

25   system then attempts to find the market segment of the CAA main account. If the market segment of the CAA main account is still missing, the data processing system then attempts to find the market segment of the CAA main account's BAC.

30   "?" means the Product Rule's PRICE Tbl Name. If "?" is blank, there is no Price Table applicable for this Product Rule. If "?" is "AUTO", the data processing system constructs the identifier of the Price Table. If the Price Table with the constructed identifier does not

35   exist, there is no Price Table applicable for this Product Rule. If "?" contains any other value, this value is the identifier of the Price Table. "C001" is a Price Table

provided "out of the box" and contains sample costs.
"S001" is a Price Table provided "out of the box" and
contains sample prices.

"*" in PrdtRule Scope means if the BSC1/2/3/4
5 Billable Service Code actually has a unit price in the
Price Table, i.e., Price Method (Mth 1) of "U".

Assume the data processing system is performing a
pricing for BSC1/2/3/4 billable Service Code "12345678".
Further assume the account is "11111111111-01DDA";
10 BSC1/2/3/4 Billable Service Code "12345678" belongs to
product code "35"; account '11111111111-01DDA' is a CAA
subordinate account and its CAA main account is
"222222222222-01DDA"; the CAA main account belongs to BAC
"0712301"; and the CAA main account belongs to market
15 segment "OTHER". The sequence of Product Rule lookups is
performed as illustrated in the following examples, until
a non-blank PRICE Tbl Name is found.

Step	Entity Name/Num	Product Code	Apply To Indic	PrdtRule Scope	PRICE Tbl Name
1	_____ -__CNTL	35	ACMK	DFLT	C001
2	12345678	35	SVC	12345678	?
3	11111111111-01DDA	35	ACNT	12345678	?
4	11111111111-01DDA	35	ACNT	*	?
5	222222222222-01DDA	35	CAA	12345678	?
6	222222222222-01DDA	35	CAA	*	?
7	11111111111-01DDA	35	ACNT	DFLT	?
8	222222222222-01DDA	35	CAA	DFLT	?
9	0712301	35	BAC	DFLT	?
10	OTHER	35	MKT	DFLT	?
11	35	35	PRDT	DFLT	S001

-19-

| 12 | PBB | PBB | PRDT | DFLT | S001 |

Special Group is an optional field. Special Group can be blank, "Y" or "N". This attribute can only be "Y" if Price Table has a four-character name (not "AUTO") and
5 the schema of the price table is "BNDL".

Alternate Account is an optional field. When billing is to be performed, the data processing system uses the Product Rules to find Alternate Accounts. The data processing system performs Product Rule lookups to find
10 whether there is an applicable Alternate Account. If there is an Alternate Account, even if a match has been found, a different account may be billed instead. Alternate Account may have a value of blank or an account number.
15 When Alternate Account is blank, there is no Alternate Account applicable for this Product Rule and the data processing system continues to look by executing the next step. When Alternate Account is non-blank, the value must be an account which exists on the database and
20 Alternate Account Type must be either "C" when the Apply To Indic is "SVC" or "F" when the Apply To Indic is "ACNT".

In the first example, assume the data processing system needs to finds whether there is an Alternate
25 Account for "11111111777-01DDA". Further assume that BSC1/2/3/4 Billable Service Code "ABC050" which belongs to product "05", is being used. Then, the Product Rules lookup stops at step 2 after finding an Alternate Account for the BSC1/2/3/4 Billable Service Code.
30

Step	Entity Name/Num	Product Code	Apply To Indic	PrdtRule Scope	Alternate Account	Alternate Account Type
1	11111111 777- 01DDA	05	ACNT	DFLT	blank	blank
2	ABC050	05	SVC	ABC050	010091111	C

1111-
01CNTL

Using slightly different Product Rules, the Product
Rules lookup in the next example stops at step 1 after
finding an Alternate Account for the Entity Name/Num.

Step	Entity Name/Num	Product Code	Apply To Indic	PrdtRule Scope	Alternate Account	Alternate Account Type
1	11111111 777- 01DDA	05	ACNT	DFLT	111145678 88-01DDA	F
2	ABC050	05	SVC	ABC050	010091111 1111- 01CNTL	C

Using slightly different Product Rules in this
example, the Product Rules lookup stops at step 2 having
found no applicable Alternate Account.

Step	Entity Name/Num	Product Code	Apply To Indic	PrdtRule Scope	Alternate Account	Alternate Account Type
1	11111111 777- 01DDA	05	ACNT	DFLT	blank	blank
2	ABC050	05	SVC	ABC050	blank	blank

Alternate Acnt Type is an optional field. Alternate
Acnt Type has a value of blank, "F" or "C". When
Alternate Account is non-blank, Alternate Account Type
must be either "C" when the Apply To Indic is "SVC" or "F"
when the Apply To Indic is "ACNT". "C" means the
BSC1/2/3/4 Billable Service Code is a cost only service to
the BAC. The BSC1/2/3/4 Billable Service Code is
allocated to a control account whenever this BSC1/2/3/4
Billable Service Code is used. "F" means the BSC1/2/3/4

-21-

Billable Service Codes for this account will be allocated to the Alternate Account.

Product Rule lookups for Alternate Account Type are similar to that discussed above for Alternate Account.

5   Fee Indicator is an optional field and is dormant.

Collection Indicator is an optional field. When billing is to be performed, the data processing system uses the Product Rules to find the applicable Collection Indicator. The data processing system performs Product

10 Rule lookups until a non-blank Collection Indicator is found. The lookups do not use CAA roles. Therefore, the lookups are not interested in whether an account is a CAA individual account or a CAA main account or a CAA subordinate account.

15   The sequence and hierarchy of Product Rule lookups for Collection Indicator is as follows:

Step	Entity Name/Num	Product Code	Apply To Indic	PrdtRule Scope	Collection Indic
1	_____ - __NOS%	The product code	ACMK	DFLT	OTHR
2	The account number	The product code	ACNT	The BSC1/2/3/4 Billable Service Code	?
3	The BSC1/2/3/4 Billable Service Code	The product code	SVC	The BSC1/2/3/4 Billable Service Code	APP1
4	The account number	The product code	ACNT	DFLT	?
5	The product	The	PRDT	DFLT	APP2

-22-

	code	product			
		code			
6	PBB	PBB	PRDT	DFLT	APP2

"?" means the Product Rule's Collection Indicator. If "?" is blank, there is no Collection Indicator applicable for this Product Rule and the data processing system continues to look by executing the next step. Collection Indicator values may be: Blank, "APP1", "APP2", or "OTHR".

Assume the data processing system needs to finds the Billing Category for account "11111111111-01SAV". Further assume that the BSC1/2/3/4 Billable Service Code is "12345678" for product "10". The sequence of Product Rule lookups is performed as illustrated in the following examples, until a non-blank Collection Indicator is found.

Step	Entity Name/Num	Product Code	Apply To Indic	PrdtRule Scope	Collection Indic
1	_____ -__NOS%	10	ACMK	DFLT	OTHR
2	11111111111-01SAV	10	ACNT	12345678	?
3	12345678	10	SVC	12345678	APP1
4	11111111111-01SAV	10	ACNT	DFLT	?
5	10	10	PRDT	DFLT	APP2
6	PBB	PBB	PRDT	DFLT	APP2

In the above example, step 6 does not execute because the Product Rule lookups stops at step 5, after finding "APP2".

Advising Code is an optional field. When billing is to be performed, the data processing system uses the Product Rules to find the Advising Code. The data processing system performs Product Rule lookups to find whether there is an applicable Advising Code.

Advising Code may have a value of blank, "1", "2", "3", "4", or "5". When Advising Code is blank, there is no Advising Code applicable for this Product Rule. "1" means balance based but with no statement. "2" means balance

5 based by statement. "3" means fee based but with no statement. "4" means fee based by statement. "5" means fee based by invoice.

Assume the data processing system needs to find whether there is an Advising Code for product "05" for

10 account "11111111777-01DDA". Using sample values for Advising Code, the Product Rules lookup would find that there is no applicable Advising Code in the first entry and the Advising Code is "1" in the second entry.

Entity Name/Num	Product Code	Apply To Indic	PrdtRule Scope	Advising Code
11111111777-01DDA	05	ACNT	DFLT	blank
11111111777-01DDA	05	ACNT	DFLT	1

15

Minimum Revenue Indicator is an optional field. When pricing is to be performed, the data processing system uses the Product Rules to find the applicable Minimum Revenue Indicator. The data processing system performs

20 Product Rule lookups until a non-blank Minimum Revenue Indicator is found. The lookups use CAA roles. Hence, when an account has the CAA Role of CAA subordinate account, they may use its CAA main account during the lookup.

25 The sequence and hierarchy of Product Rule lookups is as follows:

Step	Entity Name/Num	Product Code	Apply To Indic	PrdtRule Scope	Minimum Revenue Indicator
1	The account number	The product code	ACNT	The BSC1/2/3/4 Billable Service Code	?
2	The account number	The product code	ACNT	*	?
3	The account number	The product code	ACNT	DFLT	?
4	The CAA main account number	The product code	CAA	The BSC1/2/3/4 Billable Service Code	?
5	The CAA main account number	The product code	CAA	*	?
6	The CAA main account number	The product code	CAA	DFLT	A

"?" means the Product Rule's Minimum Revenue Indicator and may be blank, "A" or "V". If "?" is blank, there is
5   no Collection Indicator applicable for this Product Rule and the data processing system continues to look by executing the next step. "A" indicates to always apply minimum even if no activity occurred for the BSC1/2/3/4 Billable Service Code. "V" means to only apply minimum
10   when activity occurred for the BSC1/2/3/4 Billable Service Code.

When the account uses a CAA Role of a CAA Individual Account, only steps 1, 2 and 3 are applicable. When the account uses a CAA Role of a CAA Main Account, all the steps are applicable. When the account uses a CAA Role of

5   a CAA Subordinate Account, steps 1, 2 and 3 use the account number of the CAA Subordinate Account; and steps 4, 5 and 6 use the account number of its CAA Main Account.

For the next example, assume the data processing system needs to find the Minimum Revenue Indicator for

10 account "22221111177-01DDA". Further assume that the account uses a CAA Role of a CAA Main Account and the BSC1/2/3/4 Billable Service Code is "12345678" for product "10". Using sample values for Minimum Revenue Indicator, the Product Rules lookup in the next example stops at step

15 4 after finding the value "V".

Step	Entity Name/Num	Product Code	Apply To Indic	PrdtRule Scope	Minimum Revenue Indicator
1	22221111177 -01DDA	10	ACNT	12345678	blank
2	22221111177 -01DDA	10	ACNT	*	blank
3	22221111177 -01DDA	10	ACNT	DFLT	blank
4	22221111177 -01DDA	10	CAA	12345678	V
5	22221111177 -01DDA	10	CAA	*	blank
6	22221111177 -01DDA	10	CAA	DFLT	A

In the next example, the Product Rules lookup uses steps A1, A2, A3, A4, A5 and A6 but stops at step A4 after

20 finding the value "V" for the CAA Subordinate Account. The Product Rules lookup then uses steps B1, B2, B3, B4, B5 and B6, then stops at step B2 after finding a different value of "A" for the CAA Main Account .

Step	Entity Name/Num	Product Code	Apply To Indic	PrdtRule Scope	Minimum Revenue Indicator
A1	11111111111 -01DDA	10	ACNT	12345678	blank
A2	11111111111 -01DDA	10	ACNT	*	blank
A3	11111111111 -01DDA	10	ACNT	DFLT	blank
B1	22221111177 -01DDA	10	ACNT	12345678	blank
B2	22221111177 -01DDA	10	ACNT	*	A
B3	22221111177 -01DDA	10	ACNT	DFLT	blank
A/B4	22221111177 -01DDA	10	CAA	12345678	V
A/B5	22221111177 -01DDA	10	CAA	*	blank
A/B6	22221111177 -01DDA	10	CAA	DFLT	A

Derived Volume On is an optional field. The use of Derived Volume On attribute is dormant. Derived Volume has a value of blank or "Y" meaning derived volume is on.

Subscription Volume is an optional field. When pricing is to be performed, the data processing system uses the Product Rules to find the Subscription Volume. Subscription Volume contains a numeric value. The data processing system performs Product Rule lookups to find whether there is an applicable Subscription Volume. When Subscription Volume is not blank, PrdtRule Scope must be a BSC1/2/3/4 Billable Service Code and that BSC1/2/3/4 Billable Service Code must use a Service Role of "SUBS" on the Service Details screen.

The Product Rule lookups is as follows:

Step	Entity Name/Num	Product Code	Apply To Indic	PrdtRule Scope	Subscription Volume
1	The account number	The product code	ACNT	The BSC1/2/3/4 Billable Service Code	?

"?" is Subscription Volume. Usually, the Subscription Volume number is "1" and is used in the [price * volume] calculation to determine revenue. For
5 billing, Subscription Volume can be suppressed on the BILLFEED output if the BSC1/2/3/4 Billable Service Code's Suppress Feed Vol is "Y" on the Service Details screen. BILLFEED output is an output file produced by the data processing system which contains the complete details of
10 what customers re to be billed. The Service Details screen is a screen provided as part of the data processing system which users use to define attributes of each Service code, including the BSC1/2/3/4 Billable Service Codes.
15   Billing Cycle and Run are optional fields. When billing is to be performed, the data processing system uses the Product Rules to find the Billing Cycle and Run applicable for each product. The data processing system performs Product Rule lookups to find the applicable
20 Billing Cycle and Run.

The sequence and hierarchy of Product Rule lookups is as follows:

Step	Entity Name/Num	Product Code	Apply To Indic	PrdtRule Scope	Billing Cycle	Run
1	The product code	The product code	PRDT	DFLT	?	?
2	PBB	PBB	PRDT	DFLT	ML	1

Billing Cycle may contain a value of blank or "ML". "ML" means bill monthly. When Billing Cycle is blank, Run must also be blank. When both Billing Cycle and Run are blank, there is no Billing Cycle and Run applicable for

5   this Product Rule and the data processing system continues to look.

Run has a value of blank or "1". "1" means billing run 1. Billing Cycle and Run are either both non-blank or both blank.

10   For the following example, assume the data processing system needs to find the Billing Cycle & Billing Run for product "10". The Product Rules lookup stops at step 2.

Step	Entity Name/Num	Product Code	Apply To Indic	PrdtRule Scope	Billing Cycle	Run
1	10	10	PRDT	DFLT	blank	blank
2	PBB	PBB	PRDT	DFLT	ML	1

15   One-Liner for Ac/BAC/Sv/Mk/Prd is a display only based on the values of Entity Name/Num and Apply to Indic. Ac/BAC/Sv/Mk/Prd is used to provide more information about the Entity Name/Num and the details are derived based on the values of Entity Name/Num and Apply To Indic.

20   Therefore, users cannot change this item.

One-Liner for Price Table Dtl is a display only. This One-Liner displays selected attributes of the Price Table record. Price Table Dtl is used to provide more information about the applicable Price Table which is

25   helpful when users are using complex Product Rules with the "AUTO" value. The details are derived based on the value of Price Tbl Name. Therefore, users cannot change this item.

One-Liner for Alternate Acnt is a display only.

30   Alternate Acnt One-Liner displays selected attributes of the Alternate Account record and is used to provide more information about the applicable Alternate Account. The details are derived based on the value of Alternate Acnt. Therefore, users cannot change this item.

-29-

Some attribute fields cannot be updated because they contain information about the name of a Product Rule. To change these attribute fields, the user needs to delete the Product Rule, for example, by using SF8-Delete

5   function key. The user then needs to make the necessary changes and insert the new Product Rule, for example, by using F8-Insert function key. For example, Entity Name/Num, Product Code, Apply to Indic and cannot be updated unless using the method described above.

10   Some fields cannot be updated because they are derived by the data processing system based on the name of the Product Rule. These fields are the One-Liner displays of the entities referred to by the Product Rule, such as Ac/BAC/Sv/Mk/Prd, Price Table Dtl and Alternate Acnt.

15   The data processing system may use software to store Product Rules which have been used during the session in its program memory area. This improves pricing and costing performance. However, when updating Product Rules, the change is not re-loaded into the program memory

20   area for a time delay, which can be up to 60 seconds.

Before an update is committed to the database, the data processing system validates the Product Rule. The validation is the same as performed for an insert.

For pricing purposes, Price Tables are used. Product

25   Rules interact with Price Tables to provide a comprehensive set of pricing combinations and to enable sophisticated exception pricing. A Product Rule can only refer to one Price Table. Product Rules which refer to a Price Table use that Price Table.

30   The Price Table can contain prices or costs, mutually exclusive, depending on the Schema of the Price Table. For example, a Schema of "COST" means that the Price Table contains only costs; a Schema of "STD" or "PRIC" means that the Price Table contains only prices; a Schema of

35   "BNDL" means a Price Table for bundled pricing which contains prices to be used for the Pricing Method known as Cross CAA/Bundled Tiering.

No: M-7085 US
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Each Price Table containing prices is related to a Price Table containing costs. The mandatory field for Price Tables containing prices is blank for Price Tables containing costs. Cost Table field is the Entity Name of

5   the Price Table containing costs. The price/cost contained within the Price Table may be a negative value. Price/cost Table Maintenance screen shows the prices and/or costs of a Price Table.

Each Price Table must nominate a Product. The Price

10 Table applies only to BSC1/2/3/4 Billable Service Codes of that Product. The same Price Table name (Entity Name) can be used for different Products.

Exception price tables ("PRIC") can be created for an account, or a CAA (i.e., the main account of a grouping of

15 accounts). Exception price tables are set up for accounts and CAA's to enable exception pricing to be performed for specific BSC1/2/3/4 Billable Service Codes of an account or across accounts within a CAA grouping of accounts. In order to enable exception pricing to be performed, the

20 following Product Rule attributes are required: Auto Name, Apply To, Scope and Schema. In general, Price Tables contain the following attributes: Entity Name, Product, Apply To, Scope, Auto Name, Schema, Category, Description, Currency Code, Alias, Valid From Date, Minimum, No of

25 Tiers, GoTo, Cost Table, Services List, Service, Description, Role, Amount, Price Method (Mth 1) & Apply To Group (Mth 2), Bundle Primary/Secondary (Bnd 1) & Bundle Character (Bnd 2), and Cat.

Entity Name is a mandatory field. When Auto Name is

30 blank, the Price Table is a generic Price Table and Entity Name must be four characters. When Auto Name is "Y", the Price Table is an exception Price Table and the value of Entity Name is used to match with a record in Product Rules. If the Price Table is an exception Price Table,

35 the Entity Name must have the value of an account, or a CAA (i.e., the main account of a grouping of accounts).

Product is a mandatory field. Product means a TMA Product Family. The Price Table applies to BSC1/2/3/4 Billable Service Codes of this Product only.

When a Price Table is to be created for a Product,
5 Service Details screen may be used to confirm that BSC1/2/3/4 Billable Service Codes for this Product and Billing Category are operational as indicated by Record Status. If the Record Status is dormant and the user desires to make a service operational, the user needs to
10 update the Record Status to active, Logoff and then Logon again.

Price Table attribute Apply To is blank for Generic Price Tables. For exception Price Tables, Apply To indicates whether an exception Price Table is applicable
15 to an account or a CAA. In this case, Auto Name must be "Y" and Apply To value must be either "ACNT" for an account or "CAA" for a CAA (i.e., the main account of a grouping of accounts).

Scope indicates how Apply To is used and is used only
20 for exception Price Tables. To use Scope, Auto Name must be "Y" and the values for Scope must be "DFLT", a BSC1/2/3/4 Billable Service Code, or "*". When Scope is not "DFLT" or "*", the content of Scope is treated as a BSC1/2/3/4 Billable Service Code.
25 The following table summarizes allowed values based on the content of Auto Name.

Auto Name	Schema	Entity Name	Product	Apply To	Scope
Blank	"STD"	Must be 4 characters	Mandatory	Blank	Blank
Blank	"PRIC"	Must be 4 characters	Mandatory	Blank	Blank
Blank	"BNDL"	Must be 4 characters	Mandatory	Blank	Blank
Blank	"RBAT"	Must be 4 characters	Mandatory	Blank	Blank
Blank	"COST"	Must be 4	Mandatory	Blank	Blank

-32-

		characters			
"Y"	"PRIC"	An account number or a CAA account number	Mandatory	"ACNT" or "CAA"	A BSC1/2/3/4 Billable Service Code, or "*", or "DFLT"

Category indicates which set(s) of BSC1/2/3/4 Billable Service Codes are applicable for the Price Table. When Amounts are recorded against BSC1/2/3/4 Billable

5 Service Codes of a Billing Category, those Amounts will be retained on the database when Billing Category of a Price Table is updated to exclude them. Those Amounts are simply made dormant by the data processing system and can be made active by making that Billing Category active

10 again. For example, when Billing Category is set to ALL and Amounts are entered against BSC2 Billable Service Codes. Billing Category is then changed to BSC1. Those Amounts entered against BSC2 Billable Service Codes are retained and can be made active again by changing Billing

15 Category to "ALL", "BOTH" or "BSC2".

Price Table attribute Description is in free form text.

Price Table attribute Currency Code is a dormant field and may be activated if desired.

20 Price Table attribute Alias is another dormant field.

Valid From Date is an optional field in the form mmm yyyy, e.g., "Jan 1998". Valid From Date is used to create different sets of Amounts. Each set of Amounts is applicable from the Valid From Date until the next Valid

25 From Date. The use of the Valid From Date field is important to billing, adjustment processing and what-if analysis queries.

When Valid From Date is blank, the Amounts are applicable as of "the dawn of time" until the next (if

30 any) Valid From Date for that Price Table. Using "the

-33-

dawn of time" enables "what-if" pricing and costing to be performed using historical Price Tables. When there is no next Valid From Date, the Amounts are applicable until "the end of time". Using "the end of time" enables "what-

5 if" pricing and costing to be performed using Price Tables which will become effective at a future date. The data processing system contains screens which users use to perform pricing and costing online. The screens allow dates to be specified for the effective date of prices,

10 the effective date of costs and the effective date of the BSC1/2/3/4 Billable Service Codes. These effective dates can be past, present or future or any combination. Hence the data processing system provides "what-if" pricing and costing.

15   Minimum is an optional field, used to define pricing tiers for tiered discounting and volume discounting. Each BSC1/2/3/4 Billable Service Code in each tier can use a different Amount. The use of Minimum is illustrated in the examples below.

20

Tier	Minimum	BSC1/2/3/4 Billable Service Code	Included in this tier	Amount	Price Method (Mth 1)
1	1	1234567	Yes	7.0000	T
2	15	1234567	Yes	7.5400	T
3	25	1234567	Yes	7.4000	T

    In the above example, BSC1/2/3/4 Billable Service Code 1234567 uses three tiers. The first tier is effective for the first fourteen. The second tier is

25 effective for the next ten. The third tier is effective for the remainder. Each tier in this example uses the same Price Method (Mth 1) of "T".

    The first tier usually commences with Minimum value of "1". A first tier commencing with Minimum value of "0"

30 is a special case and will be discussed later. There is a limit of 99 tiers. Another limitation is that the Price

-34-

Method (Mth 1) for a BSC1/2/3/4 Billable Service Code must be the same for all tiers of that BSC1/2/3/4 Billable Service Code.

5 To change Minimum, the procedure is as follows: delete the record; change Minimum; and insert the record.

When a BSC1/2/3/4 Billable Service Code does not appear in any preceding tier, pricing for that BSC1/2/3/4 Billable Service Code will only commence when the quantity of that BSC1/2/3/4 Billable Service Code reaches the

10 Minimum. The next example illustrates this point.

Tier	Minimum	BSC1/2/3/4 Billable Service Code	Included in this tier	Amount	Price Method (Mth 1)
1	1	1234567	Skipped	None	None
2	10	1234567	Yes	1.8000	T
3	20	1234567	Yes	0.0000	T
4	30	1234567	Skipped	None	None
5	40	1234567	Yes	1.6000	T

If the quantity of BSC1/2/3/4 Billable Service Code 1234567 is 120, the price is calculated as follows:

15

Tier	Quantity	Tier Amount	Price calculated
1	9	None	None
2	10	1.8000	19 * 1.8000
3	10	0.0000	10 * 0.0000
4	10	0.0000	10 * 0.0000
5	81	1.6000	1.6000 * 81

Each method can be further qualified by up to three other indicators (each a single character). The additional indicators are ApplyToGroup,

20 Primary/SecondaryFlag and BundleChar. Following are some rules that apply to any given price unit record:

Minimum	Pricing Methods	Apply To	Primary/	Bundle

-35-

	Allowed (Mth 1)	Grp (Mth 2)	Secondary (Bnd 1)	Character (Bnd 2)
0	M	n/a	P, S, * or blank	0-9, A-Z or blank
1	All except M	Y, N or blank (=Y)	n/a	n/a
>1	T, V, $ or L	Y, N or blank (=Y)	n/a	n/a

Different Pricing Methods against the same service at different Minimums (not counting Minimum of zero) is not allowed. All higher Minimums must match the Pricing

5   Method for a service at Minimum of 1. Other limitations include: only one Primary per Bundle Character; Secondaries must be Price Method of "M"; Secondaries must be zero price; each + service can have a different markup; bundling is only allowed for Pricing Method of "M"; and if

10   Pricing Method "F" is used on a service, Minimum must be "1" and no other entry can exist for that service, regardless of Minimum or Pricing Method.

No of Tiers is a display only field.

GoTo is an optional field. By entering a value, the

15   user can use the SpgDn-GoTo function key to display BSC1/2/3/4 Billable Service Codes starting with the nearest matching BSC1/2/3/4 Billable Service Code at the top of the list of BSC1/2/3/4 Billable Service Codes. Other values for GoTo attribute are "TOP" to display the

20   first page of the BSC1/2/3/4 Billable Service Codes list; spaces to display the first page of the BSC1/2/3/4 Billable Service Codes list; "BOT" to display the last page of the BSC1/2/3/4 Billable Service Codes list; and "zzzzzzzz" to display the last page of the BSC1/2/3/4

25   Billable Service Codes list.

Services List is a list of BSC1/2/3/4 Billable Service Codes. For each item, the following fields are shown: Service, Service Description, Role, Amount, Price Method (Mth 1) & Apply To Group (Mth 2), Bundle

Primary/Secondary (Bnd 1) & Bundle Character (Bnd 2), and Cat.

Service shows the BSC1/2/3/4 Billable Service Code as shown on the Service Details screen. Description is
5 Description as shown on the Service Details screen. Role is Service Role as shown on the Service Details screen. Role can have the following value: BAL (Balance), BICA(Actual Basic Item), BICD (Derived Basic Item), BICS (Special Derived Basic Item), COST(Cost Only), DOSS
10 (Daylight Overdraft), DRCT(Direct Expense Allocation), FLOT (Float), MIS (MIS Information), MTRV (Minimum Revenue (x-services)), NA (None (FSC & TSC)), NORM (Normal Service), REJ% (% Rejects), RFR$ (Rebate $ Basis), RFR% (Rebate % Basis), RFT (Rebate % Total Revenue), SERV
15 (Inter Office Allocation), SUBS (Subscription), THSH (Threshold Revenue), TP-$ (Totally Priced,) TP-% (Totally Priced (mark-up), TP-C (Totally Priced (collected)), TP-D (Totally Priced (deduct fee)), TP-M (Totally Priced (MIS deduct fee)), TP-R (Totally Priced (referral deduct fee)),
20 or TP-U (Totally Priced (uncollected)).

Amount is a price or cost amount and is shown as 14 digits plus 4 decimal places. When an Amount is entered, Price Method (Mth 1) must also be entered.

Amount is treated as a "hard zero amount", meaning
25 the Amount is priced as zero when Amount is blank or "0" and Price Method (Mth 1) is "V" or "T" or Price Method (Mth 1) is "U" and Scope is "*".

Following is a sample Price Table and contains the following data:
30

Tier	Minimum	BSC1/2/3/4 Billable Service Code	Included in this tier	Amount	Price Method (Mth 1)
1	1	1234567	Skipped	None	None
2	10	1234567	Yes	1.8000	T
3	20	1234567	Yes	0.0000	T
4	30	1234567	Skipped	None	None

5   40   1234567   Yes   1.6000   T

If the quantity of BSC1/2/3/4 Billable Service Code
1234567 totals 120, the price is calculated as follows:

Tier	Quantity	Tier Amount	Price calculated
1	9	None	None
2	10	1.8000	10 * 1.8000
3	10	0.0000	10 * 0.0000
4	10	0.0000	10 * 0.0000
5	81	1.6000	81 * 1.6000

5

There are 2 Mth fields in Price Table attribute Price
Method (Mth 1) & Apply To Group (Mth 2): Price Method (Mth
1) is a pricing method applicable to the BSC1/2/3/4
Billable Service Code and Apply To Group (Mth 2) is a
10   pricing method bundling indicator which describes how the
quantity of a BSC1/2/3/4 Billable Service Code is to be
totaled across a grouping of accounts.

For a Price Method (Mth 1) value of "%" and
Description of TP-% (markup of TP), transaction analysis
15   calculates a special value for this BSC1/2/3/4 Billable
Service Code and records the special value in the Account
Activity record. Pricing then uses this special value in
the following manner: for prices, the price will be the
special value as a percentage multiplied by the Amount
20   field in the Price Table; and for costs, the cost will be
the special value. Price Method (Mth 1) Value can also be
"+" meaning Cost Plus (% markup), "F" meaning Flat Fee,
"M" meaning Minimum Revenue, "X" meaning Maximum Revenue,
"T" meaning Tiering, "U" meaning Unit Price, or "V"
25   meaning Volume Discount.

For an Apply To Group (Mth 2) Value of "Y", this
method applies to group and the Price Method (Mth 1) Value
must be "T", "U" or "V". The quantity for this BSC1/2/3/4
Billable Service Code is totaled as a single bundle across
30   all accounts in the group. The total of the bundle is
then used for pricing of this BSC1/2/3/4 Billable Service

Code for the entire group of accounts. Hence, volume discounting is performed on the group of accounts collectively.

5   For an Apply To Group (Mth 2) Value of blank, this method applies to group and the Price Method (Mth 1) Value can be any. The quantity for this BSC1/2/3/4 Billable Service Code is totaled as a single bundle across all accounts in the group. The total of the bundle is then used for pricing of this BSC1/2/3/4 Billable Service Code

10   for the entire group of accounts. Hence, volume discounting is performed on the group of accounts collectively.

          For an Apply To Group (Mth 2) Value of "N", this method does not apply to group and the Price Method (Mth

15   1) Value must be "T", "U" or "V". Each "N" BSC1/2/3/4 Billable Service Code is priced as a single bundle for each account in the group. Hence, volume discounting is performed on each account separately

          There are 2 Bnd fields in Price Table attribute

20   Bundle Primary/Secondary (Bnd1): Bundle Primary/Secondary (Bnd 1) which is a minimum revenue indicator and Bundle Character (Bnd 2) which is a minimum revenue bundling indicator.

          For a Bundle Primary/Secondary (Bnd 1) Value of

25   blank, bundling for minimum revenue is not applicable for this BSC1/2/3/4 Billable Service Code.

          For a Bundle Primary/Secondary (Bnd 1) Value of "*", Bnd 1 applies to all BSC1/2/3/4 Billable Service Codes. There can be only one BSC1/2/3/4 Billable Service Code in

30   a Price Table Category which uses "*". The pricing result for all BSC1/2/3/4 Billable Service Codes in the Price Table which are not "P" and which are not "S" are totaled into a single bundle. The bundle is then used to compare with the Minimum "0" tier Amount for this BSC1/2/3/4

35   Billable Service Code. When the bundle is less than the minimum, the pricing result is increased to match the Amount.

For a Bundle Primary/Secondary (Bnd 1) Value of "P", bundling only applies to the primaries in the bundle. There can be only one "P" BSC1/2/3/4 Billable Service Code for a Bundle Character (Bnd 2) bundle. The quantities for

5   this BSC1/2/3/4 Billable Service Code are bundled together with its secondary BSC1/2/3/4 Billable Service Codes. Bundle Character (Bnd 2) is used to match secondary BSC1/2/3/4 Billable Service Codes and their primary BSC1/2/3/4 Billable Service Code into a bundle. The total

10   for bundle is then used to compare with the Minimum "0" tier Amount for this "P" BSC1/2/3/4 Billable Service Code. When the bundled total is less than the Minimum "0" tier Amount, the pricing result is increased to match the Minimum "0" tier Amount.

15   For a Bundle Primary/Secondary (Bnd 1) Value of "S", bundling only applies to the secondaries in the bundle. The quantity for this "S" BSC1/2/3/4 Billable Service Code and all other "S" BSC1/2/3/4 Billable Service Codes in a bundle are added to the primary's bundle.

20   For a Bundle Character (Bnd 2) Value of blank, Bundle Primary/Secondary (Bnd 1) Value must be blank or "*". For a Bundle Character (Bnd 2) Value of "0" - "9" and "A" - "Z", Bundle Primary/Secondary (Bnd 1) Value must be "P" or "S".

25   Cat is as Category shown on the Service Details screen.

Before an update is committed to the database, the data processing system validates the Price Table. The validation is the same as performed for an insert. In

30   order to perform the update the user must first have read the price table.

When the user has entered all required fields and price values for all required BSC1/2/3/4 Billable Service Codes, regardless of how many "Pages" of BSC1/2/3/4

35   Billable Service Codes are being used or paged between, the full set of prices for that Valid From Date are inserted. Before an insert is committed to the database, the data processing system validates the Price Table.

-40-

When deleting the set of prices for the current Price Table, current Valid From Date and current Min Trans Count and if no more prices exist (i.e., for another Valid From Date or Min Trans Count), the Pricing Table name and
5   description are also deleted and the data processing system loses all record of that Price Table.

AppyToGroup can be set to "N" so that volume discounting can be placed on a Market Segment's Price Table, but the CAA volume is not be grouped for the
10 tiering/threshold determination. Blank is equivalent to "Y".

CostPlus (+) can only be used in a Price Table containing prices (i.e. not in a Price Table containing costs.
15   Each service within a price table which nominates an Amount is required to have a pricing method. Hence, each price table can have a mixture of pricing methods contained within it. The pricing methods available "out of the box" are: F (Flat Fee), U (UnitPrice or Cost), V
20 (Volume Discount), T (Tiering), + (CostPlus %), M (MinRev), X (MaxRev) and % (TP-% markup of total price).

Each pricing method can be qualified by up to four single character indicators: Pricing Method which is shown on the Price Table screen as Mth (Mth 1), Apply To Group
25 which is shown on the Price Table screen as Mth (Mth 2), Primary/Secondary Flag which is shown on the Price Table screen as Bnd (Bnd 1), and Bundle Character shown on the Price Table screen as Bnd (Bnd 2).

Special groupings can be defined for accounts which
30 causes Cross CAA Bundled Tiering to be used.

Following is a price table with sample prices:

Service Code	Price Method	Apply To Group	Bundling Prim/Sec	Bndl. Char.	Minimum	UnitPrice
DDDDDDDD	+	N/A			1	20.00%
EEEEEEEE	+	N/A			1	15.00%

-41-

In the above example, the price for service DDDDDDDD is 120.00% of the cost for that service multiplied by its volume. The price for service EEEEEEEE is 115.00% of the cost for that service multiplied by its volume.

5   Each "+" service can have a different markup. The cost is recorded in the price table's related cost table.

Following is a price table with sample prices:

Service Code	Price Method	Apply To Group	Bundling Prim/Sec	Bndl Char.	Minimum	MinRev or UnitPrice
55555555	F	N			1	$100.00

10   Flat Fee is charged if Volume is greater than zero. In this example, A Flat Fee of $100.00 is charged for service 55555555 if its volume is greater than zero.

When ApplyToGroup is "Y" or space and the price applies to a CAA (whether via standard or exception

15   pricing), the Flat Fee is apportioned across the group.

Minimum Revenue can be used regardless of service volume or only if there is service volume. Minimum Revenue cannot apply to a CAA or group of accounts. Maximum Revenue (MaxRev) is an opposite to Minimum Revenue

20   (MinRev), i.e., Maximum Revenue defines the maximum which can be charged.

Following are sample prices for a price table:

Service Code	Price Method	Apply To Group	Bundling Prim/Sec	Bndl. Char.	Minimum	MinRev or UnitPrice
11111111	M				0	$50.00
22222222	M		P	A	0	$25.00
33333333	M		S	A	[0]	[0]
44444444	M		S	A	[0]	[0]

25   Here, Services 22222222, 33333333 and 44444444 are bundled together (by Bndl.Char.) in their minimum revenue determination. The primary (Bundling Prim/Sec = "P") in

-42-

the bundle, 22222222, is marked up to satisfy any
shortfall in Minimum Revenue.

Following is a Product Rule:

Product	Entity Identifier	Apply To Scope	Price tbl	AltAc Flag	Altrnt Acnt	MinRev
35	123456789012-01DDA	ACNT	DFLT	AUTO		A

5

MinRev cannot apply to a CAA or group of accounts.

If the Bundling Primary/Secondary Flag = "*" and
Price Table's Pricing Method = "M", then the minimum
revenue is compared to the total revenue across all
10 services used by the account/group.

Following is an example showing the effect of
different Pricing Methods:

Service Code	Price Method	Apply To Group	Bundling Prim/Sec	Bndl. Char.	Minimum	UnitPrice
77777777	T	N			1	$10.00
					100	$8.00
					250	$6.50
88888888	T	N			1	$7.00
					50	$6.00
					100	$5.00
99999999	U	N			1	$8.00
AAAAAAAA	U	N			1	$8.00
11223344	T	N			1	$5.00
					35	$6.00
22334455	U	N			1	$8.00
BBBBBBBB	V	Y			1	$10.00
					100	$8.00

15   Services 77777777, 88888888 and 11223344 all use
Tiering. For service 77777777, the first 99 of its volume
for the account is priced at $10.00 per unit; volume 100
to 249 is priced at $8.00 per unit, and volume 250 and

-43-

above is priced at $6.50 per unit. For Service 88888888,
the first 49 of its volume for the account is priced at
$7.00 per unit; volume 50 to 99 is priced at $6.00 per
unit; and volume 100 and above is priced at $5.00 per

5   unit. For service 11223344, the first 34 of its volume
for the account is priced at $5.00 per unit and volume 35
and above is priced at $6.00 per unit.

Services 99999999, AAAAAAAA and 22334455 use
UnitPrice or Cost. All volume is priced at $8.00 per unit

10   for these services.

Service BBBBBBBB uses volume discount. For service
BBBBBBBB, if its combined volume for the group of accounts
(note, "apply to group" = Y) exceeds 99, all its volume is
priced at $8.00 per unit (all its activities because

15   method is "V", being volume discount instead of tiered).
Otherwise, all its volume is priced at $10.00 per unit.

Special groupings can be defined for account +
service combinations which causes Cross CAA Bundled
Tiering to be used.   A Product Rule is required for each

20   of the accounts to be included in the Cross CAA Bundled
Tiering. Each account is defined as an Entity Name/Num.
Apply To is "ACNT". Scope is the service. Price Tbl Name
is the same for all the special group. Special Group is
"Y".

25   Following are sample Product Rules:

Product	Entity Name/Num	Apply To	Scope	Price Tbl Name	SpclGrp
35	11111111111 -01DDA	ACNT	11111111	JLB1	Y
35	11111111111 -01DDA	ACNT	22222222	JLB1	Y
35	222222222222 -01DDA	ACNT	11111111	JLB1	Y

Price table JLB1 would be set up as Schema "BNDL" as
follows:

-44-

Service Code	Price Method	Apply To Group	Bundling Prim/Sec	Bndl. Char.	Minimum	Unit Price
11111111	T				1	$1.00
	T				21	$0.90
	T				31	$0.80
22222222	T				1	$1.00
	T				21	$0.90
	T				31	$0.80

Each different service in the bundle must have entries with identical prices, methods, and at all tiers.

5   The above Price Method could just as easily be a "V", if Volume Discount were to be used instead of Tiered.
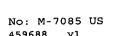
Following are sample service volumes:

CAA	Account Number	Service	Volume
A	111111111111-01DDA	1111111	10
		2222222	5
B	222222222222-01DDA	1111111	21

10   Following are applicable tiered discount prices:

Tier	Service	Minimum	Price
1	1111111 bundled with 2222222	1	1.00
2		21	0.90
3		31	0.80

Total Volume for services 1111111 and 2222222 = 10 + 5 + 21 = 36

15   Following are sample calculations for Tiering:

```
Total Revenue =   [TIER 1]   20 X 1.00   = 20.00
                  [TIER 2]   10 X 0.90   =  9.00
                  [TIER 3]    6 X 0.80   =  4.80
                  total                  = 33.80
```

Following is a sample apportioning:

CAA	DDA	SERVICE	VOL	CALCULATION	REVENUE	TOTAL
A	1	11111111	10	33.80 X 10 / 36	9.39	
		22222222	5	33.80 X 5 / 36	4.69	
B	2	11111111	21	33.80 X 21 / 36	19.72	
						33.80

5   For account + service combinations, the bundled
prices need to be apportioned back to the accounts. This
requires knowledge of the bundled volumes, by service
across the accounts in each bundle. The data processing
10   system obtains this information in 2 steps. The first
step is performed by the Activity Load and the second step
is performed by the Pre Billing Bundler.

       Billing would process each account + service in the
activity table individually, using the same formula each
15   time: Apportioned Rev = [Total Group Rev based on GroupVol
& Tier-Vol] x BillVol / GrpVol. Note that the GroupVol is
only used by pricing if the Product Rule's Special Group =
"Y".

       The various embodiments of the methods and structures
20   of this invention that are described above are
illustrative only of the principles of this invention and
are not intended to limit the scope of the invention to
the particular embodiments described. In view of this
disclosure, those skilled-in-the-art can define other
25   product rules, price tables and billing methods, and use
these alternative features to create a method, circuit, or
system according to the principles of this invention.